AMENDMENTS TO THE CLAIMS:

Please amend the claims so that they read as follows:

Claim 1 (Currently Amended): A radiation three-dimensional position detector, comprising:

a light receiving element having a light receiving plane, which outputs an electric signal corresponding to the incident position and intensity of light incident on the light receiving plane; and

a scintillator unit having scintillator cells each of which produces scintillation light corresponding to the radiation absorbed thereby,

wherein K layers of scintillator arrays (K is an integer number of 2 or greater), each having the scintillator cells arrayed in M rows - N columns two-dimensional matrix (each of M and N is an integer number of 2 or greater), are laminated on the light receiving plane of said light receiving element, and

wherein at least one of side faces of a scintillator cell $C_{k1,m,n}$ included in a scintillator array of the k1-th layer has different optical characteristic from that of the corresponding side face of a scintillator cell $C_{k2,m,n}$ included in a scintillator array of the k2-th layer, said corresponding side face being located at the same two-dimensional position as said one of side faces in a plane parallel to the [[right]] <u>light</u> receiving plane, provided that $C_{k,m,n}$ is defined as a scintillator cell located at m-th row and a n-th column within a scintillator array of the k-th layer ($1 \le k \le K$, $1 \le m \le M$, $1 \le n \le N$),

wherein the partition mediums between scintillator cells are made up of either of a reflective material and a translucent material with respect to said scintillation light, and

an area enclosed by the partition medium of the reflective material in said k1-th layer scintillator array occupies a different region in the plane parallel to the light receiving plane from a region occupied by an area enclosed by the partition medium of the reflective material in said k2-th layer scintillator array.

Claim 2 (Currently Amended): A radiation three-dimensional position detector, comprising:

a light receiving element having a light receiving plane, which outputs an electric signal corresponding to the incident position and intensity of light incident on the light receiving plane; and

a scintillator unit having scintillator cells each of which produces scintillation light corresponding to the radiation absorbed thereby,

wherein K layers of scintillator arrays (K is an integer number of 2 or greater), each having the scintillator cells arrayed in M rows - N columns two-dimensional matrix (each of M and N is an integer number of 2 or greater), are laminated on the light receiving plane of said light receiving element,

wherein each of the scintillator cells is separated from the adjacent scintillator cells by partition mediums, and the partition mediums between

scintillator cells are made up of either of a reflective material and a translucent material with respect to said scintillation light, and

wherein at least one of side faces of a scintillator cell $C_{k1,m,n}$ included in a scintillator array of the k1-th layer is faced with the partition medium which has different optical characteristic from that of the partition medium facing the corresponding side face of a scintillator cell $C_{k2,m,n}$ included in a scintillator array of the k2-th layer, said corresponding side face being located at the same two-dimensional position as said one of side faces in a plane parallel to the [[right]] light receiving plane, provided that $C_{k,m,n}$ is defined as a scintillator cell located at m-th row and a n-th column within a scintillator array of the k-th layer ($1 \leq k \leq K$, $1 \leq m \leq M$, $1 \leq n \leq N$), and

an area enclosed by the partition medium of the reflective material in said k1-th layer scintillator array occupies a different region in the plane parallel to the light receiving plane from a region occupied by an area enclosed by the partition medium of the reflective material in said k2-th layer scintillator array.

Claim 3 (Original): The radiation three-dimensional position detector according to claim 2, characterized in that said scintillator cell is cuboidal in shape.

Claim 4 (Canceled).

Claim 5 (Original): The radiation three-dimensional position detector according to claim 4, characterized in that a position of the center of gravity of a light spot, where the scintillation light generated in one group of scintillator cells enclosed by the partition medium of the reflective material in a layer of the scintillator array reaches on the light receiving plane, is different from a position of the center of gravity of a light spot, where the scintillation light generated in the other group of scintillator cells enclosed by the partition medium of the reflective material in a layer of the scintillator array reaches on the light receiving plane.

Claim 6 (Original): The radiation three-dimensional position detector according to claim 2, characterized in that

in said k1-th layer scintillator array, each partition medium between a scintillator cell $C_{k1,p,n}$ and a scintillator cell $C_{k1,p+1,n}$, and each partition medium between a scintillator cell $C_{k1,m,q}$ and a scintillator cell $C_{k1,m,q+1}$ are made up of reflective materials with respect to said scintillation light, and the other partition mediums are made up of translucent materials with respect to said scintillation light (each of p and q is an integer number in an arithmetic progression with a tolerance of 2,: $1 \le p < M, 1 \le q < N$);

in said k2-th layer scintillator array, each partition medium between a scintillator cell $C_{k2,r,n}$ and a scintillator cell $C_{k2,r+1,n}$, and each partition medium between a scintillator cell $C_{k2,m,s}$ and a scintillator cell $C_{k2,m,s+1}$ are made up of reflective materials with respect to said scintillation light, and the other partition mediums are made up of translucent materials with respect to said scintillation light (each of r and s is an integer number in an arithmetic progression with a tolerance of 2,: $1 \le r < M$, $1 \le s < N$, "$p \ne r$" and/or "$q \ne s$").

Claim 7 (Original): The radiation three-dimensional position detector according to claim 2, characterized by further comprising an operation section that calculates the three dimensional position where the radiation is absorbed in said scintillator unit based on the electric signal, the electric signal being outputted from the light receiving element, wherein the scintillation light produced in the scintillation unit is made incident on the light receiving plane.

Claim 8 (Original): The radiation three-dimensional position detector according to claim 5, further comprising an operation section, wherein said operation section calculates the position of the center of gravity of the light spot based on the electric signal, and calculates the three dimensional position where the radiation is absorbed in said scintillator unit based on the position of the center of gravity of the light spot on the light receiving plane.

Claim 9 (Original): The radiation three-dimensional position detector according to claim 7, characterized in that

said light receiving element has a plurality of output terminals for outputting said electric signals, and

said operation section processes said electric signals outputted from the plurality of output terminals of said light receiving element to obtain an incident position of the scintillation light on said light receiving plane, and calculates the three dimensional position where the radiation is absorbed in said scintillator unit based on the incident position of the scintillation light.

Claim 10 (Original): The radiation three-dimensional position detector according to claim 7, characterized in that

said light receiving element has a plurality of output terminals for outputting said electric signals, and

said operation section calculates energy of the radiation absorbed in the scintillator unit based on a sum of values of electric signals outputted from the plurality of output terminals of said light receiving element.

Claim 11 (Original): The radiation three-dimensional position detector according to claim 7, characterized in that

said light receiving element has a plurality of output terminals for outputting said electric signals, and

said operation section calculates energy of the scintillation light generated in the scintillator unit based on a sum of values of electric signals outputted from the plurality of output terminals of said light receiving element.

Claim 12 (Currently Amended): The radiation three-dimensional position detector according to claim 7, characterized in that said operation section calculates energy of the radiation absorbed in each of the ~~scintilator~~ scintillator cells.

Claim 13 (Currently Amended): The radiation three-dimensional position detector according to claim 7, characterized in that said operation section calculates energy of the scintillation light generated in each of the ~~scintilator~~ scintillator cells.

Claim 14 (New): A radiation three-dimensional position detector, comprising:

a light receiving element having a light receiving plane, which outputs an electric signal corresponding to the incident position and intensity of light incident on the light receiving plane; and

a scintillator unit having scintillator cells each of which produces scintillation light corresponding to the radiation absorbed thereby,

wherein K layers of scintillator arrays (K is an integer number of 2 or greater), each having the scintillator cells arrayed in M rows - N columns two-dimensional matrix (each of M and N is an integer number of 2 or greater), are laminated on the light receiving plane of said light receiving element, and

wherein at least one of side faces of a scintillator cell $C_{k1,m,n}$ included in a scintillator array of the k1-th layer has different optical characteristic from that of the corresponding side face of a scintillator cell $C_{k2,m,n}$ included in a scintillator array of the k2-th layer, said corresponding side face being located at the same two-dimensional position as said one of side faces in a plane parallel to the light receiving plane, provided that $C_{k,m,n}$ is defined as a scintillator cell located at m-th row and a n-th column within a scintillator array of the k-th layer ($1 \le k \le K$,

$1 \leq m \leq M$, $1 \leq n \leq N$), and wherein in every layer at least one side face has different optical characteristic from those of the others.

Claim 15 (New): A radiation three-dimensional position detector, comprising:

a light receiving element having a light receiving plane, which outputs an electric signal corresponding to the incident position and intensity of light incident on the light receiving plane; and

a scintillator unit having scintillator cells each of which produces scintillation light corresponding to the radiation absorbed thereby,

wherein K layers of scintillator arrays (K is an integer number of 2 or greater), each having the scintillator cells arrayed in M rows - N columns two-dimensional matrix (each of M and N is an integer number of 2 or greater), are laminated on the light receiving plane of said light receiving element,

wherein each of the scintillator cells is separated from the adjacent scintillator cells by partition mediums,

wherein at least one of side faces of a scintillator cell $C_{k1,m,n}$ included in a scintillator array of the k1-th layer is faced with the partition medium which has different optical characteristic from that of the partition medium facing the corresponding side face of a scintillator cell $C_{k2,m,n}$ included in a scintillator array of the k2-th layer, said corresponding side face being located at the same two-dimensional position as said one of side faces in a plane parallel to the light receiving plane, provided that $C_{k,m,n}$ is defined as a scintillator cell located at m-th row and a n-th column within a scintillator array of the k-th layer ($1 \leq k \leq K$,

$1 \leq m \leq M$, $1 \leq n \leq N$), and wherein in every layer at least one partition medium has different optical characteristic from those of the others.

Claim 16 (New): A radiation three-dimensional position detector, comprising:

a light receiving element having a light receiving plane, which outputs an electric signal corresponding to the incident position and intensity of light incident on the light receiving plane; and

a scintillator unit having scintillator cells each of which produces scintillation light corresponding to the radiation absorbed thereby,

wherein K layers of scintillator arrays (K is an integer number of 2 or greater), each having the scintillator cells arrayed in M rows - N columns two-dimensional matrix (each of M and N is an integer number of 2 or greater), are laminated on the light receiving plane of said light receiving element, and

wherein at least one of side faces of a scintillator cell $C_{k1,m,n}$ included in a scintillator array of the k1-th layer has different optical characteristic from that of the corresponding side face of a scintillator cell $C_{k2,m,n}$ included in a scintillator array of the k2-th layer, said corresponding side face being located at the same two-dimensional position as said one of side faces in a plane parallel to the light receiving plane, provided that $C_{k,m,n}$ is defined as a scintillator cell located at m-th row and a n-th column within a scintillator array of the k-th layer ($1 \leq k \leq K$, $1 \leq m \leq M$, $1 \leq n \leq N$)($3 \leq M$, $3 \leq N$ for each layer), wherein a reflective material is disposed between a pair of the side faces of adjoining scintillator cells, and

wherein among all the side faces at the same two-dimensional position in the plane parallel to the light receiving plane, there is at least one that is not faced with the reflective material, for every two-dimensional position in the plane parallel to the light receiving plane.

Claim 17 (New): The radiation three-dimensional position detector according to claim16, wherein not more than one scintillator cell satisfies the condition that only a pair of opposing side faces are faced with the reflective material at the same two-dimensional position in the plane parallel to the light receiving plane.

Claim 18 (New): A radiation three-dimensional position detector, comprising:

a light receiving element having a light receiving plane, which outputs an electric signal corresponding to the incident position and intensity of light incident on the light receiving plane; and

a scintillator unit having scintillator cells each of which produces scintillation light corresponding to the radiation absorbed thereby,

wherein K layers of scintillator arrays (K is an integer number of 2 or greater), each having the scintillator cells arrayed in M rows - N columns two-dimensional matrix (each of M and N is an integer number of 2 or greater), are laminated on the light receiving plane of said light receiving element,

wherein each of the scintillator cells is separated from the adjacent scintillator cells by partition mediums, and

wherein at least one of side faces of a scintillator cell $C_{k1,m,n}$ included in a scintillator array of the k1-th layer has different optical characteristic from that of the corresponding side face of a scintillator cell $C_{k2,m,n}$ included in a scintillator array of the k2-th layer, said corresponding side face being located at the same two-dimensional position as said one of side faces in a plane parallel to the light receiving plane, provided that $C_{k,m,n}$ is defined as a scintillator cell located at m-th row and a n-th column within a scintillator array of the k-th layer ($1 \leq k \leq K$, $1 \leq m \leq M$, $1 \leq n \leq N$), and wherein at each of two-dimensional positions in the plane parallel to the light receiving plane, at least one layer comprises the partition medium made up of a reflective material.

Claim 19 (New): A radiation three-dimensional position detector, comprising:

a light receiving element having a light receiving plane, which outputs an electric signal corresponding to the incident position and intensity of light incident on the light receiving plane; and

a scintillator unit having scintillator cells each of which produces scintillation light corresponding to the radiation absorbed thereby,

wherein K layers of scintillator arrays (K is an integer number of 2 or greater), each having the scintillator cells arrayed in M rows - N columns two-dimensional matrix (each of M and N is an integer number of 2 or greater), are laminated on the light receiving plane of said light receiving element,

wherein each of the scintillator cells is separated from the adjacent scintillator cells by partition mediums, and

wherein at least one of side faces of a scintillator cell $C_{k1,m,n}$ included in a scintillator array of the k1-th layer is faced with the partition medium which has different optical characteristic from that of the partition medium facing the corresponding side face of a scintillator cell $C_{k2,m,n}$ included in a scintillator array of the k2-th layer, said corresponding side face being located at the same two-dimensional position as said one of side faces in a plane parallel to the light receiving plane, provided that $C_{k,m,n}$ is defined as a scintillator cell located at m-th row and a n-th column within a scintillator array of the k-th layer ($1 \leq k \leq K$, $1 \leq m \leq M$, $1 \leq n \leq N$),

characterized in that the partition mediums between scintillator cells are made up of either of a reflective material and a translucent material with respect to said scintillation light,

an area enclosed by the partition medium of the reflective material in said k1-th layer scintillator array occupies a different region in the plane parallel to the light receiving plane from a region occupied by an area enclosed by the partition medium of the reflective material in said k2-th layer scintillator array, and

characterized in that some of the partition mediums between scintillator cells are made up of a reflective material with respect to said scintillation light, an area enclosed by the partition medium of the reflective material in said k1-th layer scintillator array occupies different region in the plane parallel to the light

receiving plane from a region occupied by an area enclosed by the partition medium of the reflective material in said k2-th layer scintillator array.